AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1-85. Canceled

86. (Previously presented) Method for steering a directional audio beam that is self-demodulated from an ultrasound carrier, said method including the steps of:

generating an audio signal;

generating an ultrasound carrier signal;

modulating said carrier signal with said audio signal;

adjusting both amplitude and phase of at least one of said audio signal and said carrier signal to steer said audio beam to a desired direction; and

generating an ultrasound beam driven in said direction by said modulated carrier signal.

87. (Previously presented) The method according to claim 86 including suppressing a sidelobe of the ultrasound beam.

88. (Previously presented) The method according to claim 86 including weighting said audio and/or carrier signal by a zeroth order Bessel function to synthesize a Bessel distribution source.

89. (Previously presented) Method according to claim 88 wherein said step of generating an ultrasound beam includes driving a plurality of ultrasound transducer elements with said modulated carrier signal and said step of weighting includes adjusting gain and delay of said audio and/or carrier signal prior to driving each transducer element.

90. (Previously presented) Method according to claim 86 wherein said step of generating an ultrasound beam includes driving a plurality of ultrasound transducer

elements via a corresponding plurality of matching filters adapted to adjust the phase of the modulated carrier signal to the resonant frequency of the associated transducer element.

91. (Previously presented) Method according to claim 86 including detecting the location of a potential listener and adjusting said means for generating to steer said audio beam towards said location.

92. (Previously presented) Method according to claim 86 including reflecting said audio beam from an intermediate surface such as a billboard panel.

93. (Previously presented) A method of processing an audio signal, including:

performing a square root operation on the audio signal to generate a square rooted signal;

alternating the gain of the square rooted signal between positive and negative gain values at selected locations to generate a flipped signal, wherein the selected locations of the signal are minimum turning points of the signal;

modulating the flipped signal onto a first ultrasonic carrier wave; and

offsetting the audio signal by a predetermined amount prior to performing the square root operation to ensure that the square root operation only results in real values.

94. (Previously presented) The method of claim 93 further including the step of:

dividing the audio signal into a plurality of frames;

determining, after the offsetting step;

a minimum value of a portion of the audio signal in a particular frame;

subtracting the minimum value from the portion of the audio signal in the particular frame; and

compensating the flipped signal in adjacent frames for discontinuities resulting from subtracting different minimum amounts in adjacent frames.

95. (Previously presented) The method of claim 93 further including the steps of:

determining a first modulation envelope for the processed audio signal;

determining a second modulation envelope for an ideal square rooted signal;

determining the difference between the first and second modulation envelopes; and

modulating the difference between the first and second modulation envelopes onto a second ultrasonic carrier wave.

96. (Previously presented) A method for processing an audio signal received from an audio source, including:

processing the audio signal into a first processed audio signal;

processing the audio signal into a second processed audio signal;

modulating the first processed audio signal onto a first ultrasonic carrier wave; and

modulating the second processed audio signal onto a second ultrasonic carrier wave;

wherein the first and second ultrasonic carrier waves have different phases.

97. (Previously presented) The method of claim 96 wherein the first ultrasonic carrier wave is orthogonal to the second ultrasonic carrier wave.

98. (Previously presented) A method of processing an audio signal, including:

separating a low frequency component from the audio signal;

generating harmonics of the low frequency component using a psycho acoustic model to create a preprocessed signal; and

modulating the preprocessed signal onto an ultrasonic carrier wave.

99. (Previously presented) The method of claim 98 further including the steps of:

combining the low frequency component with the preprocessed signal prior to the modulating step;

combining other frequency components of the audio signal with the preprocessed signal prior the modulating step; and

processing the other frequency components of the audio signal using a psycho acoustic model prior to combining the other frequency components of the audio signal with the preprocessed signal.

100. (Previously presented) The method of claim 99 further including the steps of: transmitting the preprocessed signal from a first ultrasonic emitter after the modulation step;

modulating other frequency components of the audio signal onto an ultrasonic carrier wave; and

transmitting the modulated other frequency components of the audio signal using the first ultrasonic emitter or a second ultrasonic emitter.

101. (Previously presented) The method of claim 100 wherein the preprocessed signal is modulated using a first ultrasonic carrier wave and the other frequency components are modulated using a second ultrasonic carrier wave orthogonal to said first ultrasonic carrier wave.

102. (Previously presented) A method of processing an audio signal including the steps of:

separating the audio signal into a plurality of band-limited signals;

modulating each of the band-limited signals onto ultrasonic carrier waves having either the same or different carrier frequencies thereby to create a plurality of modulated signals; and

transmitting each of the modulated signals from separate ultrasonic emitters.

103. (Previously presented) The method of claim 102 further comprising the steps of: preprocessing at least one of the band-limited signals prior to the modulating step;

generating harmonics of the at least one band-limited signal; and

combining the harmonics with the at least one band-limited signal.

104. (Previously presented) A method of processing an audio signal including the steps of:

modulating the audio signal onto an ultrasonic carrier wave to provide a modulated audio signal;

separating the modulated audio signal into a plurality of band-limited signals; and

transmitting each of the plurality of band-limited signals from separate ultrasonic transmitters.

105. (Previously presented) The method of claim 104 wherein the ultrasonic transmitters are matched to a corresponding characteristic frequency of the respective band-limited signals.

106. (Previously presented) The method of claim 105 wherein the separating step is conducted by passing the audio signal through N filter banks having passbands centered at frequencies f_1 to f_N, and the band-limited signals are transmitted from N ultrasonic transmitters having mechanical resonance frequencies equal to f_1 to f_N respectively.

107. (Previously presented) Method for steering a directional audio beam that is self-demodulated from an ultrasound carrier, said method including the steps of:

generating an audio signal;

generating an ultrasound carrier signal;

modulating said carrier signal with said audio signal;

generating an ultrasound beam driven by said modulated carrier signal; and

adjusting said means for generating to steer said audio beam to a desired direction,

wherein said step of generating is performed by means of a plurality of transducer elements and said step of adjusting is performed by means of a stepper motor for rotating said transducer elements relative to at least one axis.

108. (Previously presented) Method according to claim 107 including detecting the location of a potential listener and adjusting said means for generating to steer said audio beam towards said location.

109. (Previously presented) Method according to claim 107 including reflecting said audio beam from an intermediate surface such as a billboard panel.